Commissioning Strategy

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Three aspects of commissioning:

1. A Plan – "The 1st casualty of the battle."
   goals, needed hardware & software, order of activities

2. Preparation for the expected
   Develop and built systems, develop algorithms & strategies, build machine-human interfaces

3. Preparation for the unexpected
   Have easy access to beam data and other machine relevant information. Possibility of rapid application development, …

Need to decide to what extend we should get involved in each area.

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- CERN is receptive
  - Current agreement is to have 1 scientist on every commissioning shift
  - Guideline budget: 9.5 FTEs (ideally 12 FTEs)

- Duration of stays at CERN vary
  - Long stays up to a year
  - Short stays of a few month

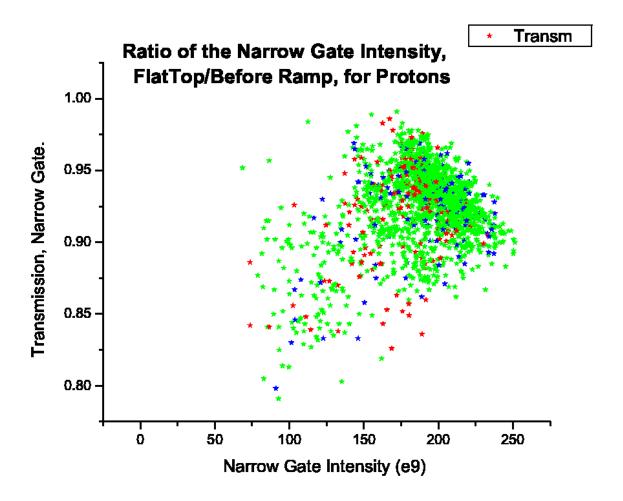- Involvement in hardware development and construction varies

- Must make machine work
  - LHC is very complex
  - Machine protection is very important
- Must control all mission critical elements
  - Can this work with people not permanently based at CERN?
- Need to coordinate large pool of people
  - Integration of LARP personnel adds complexity
- During commissioning there are probably more problems than people

- LARP personnel may be easiest integrated if people have responsibility for a specific system or problem
  - System could be US build instrumentation
  - Problem can be anything we are good at
- Responsibility implies commitment to take care of a problem
  - More difficult with limited stay

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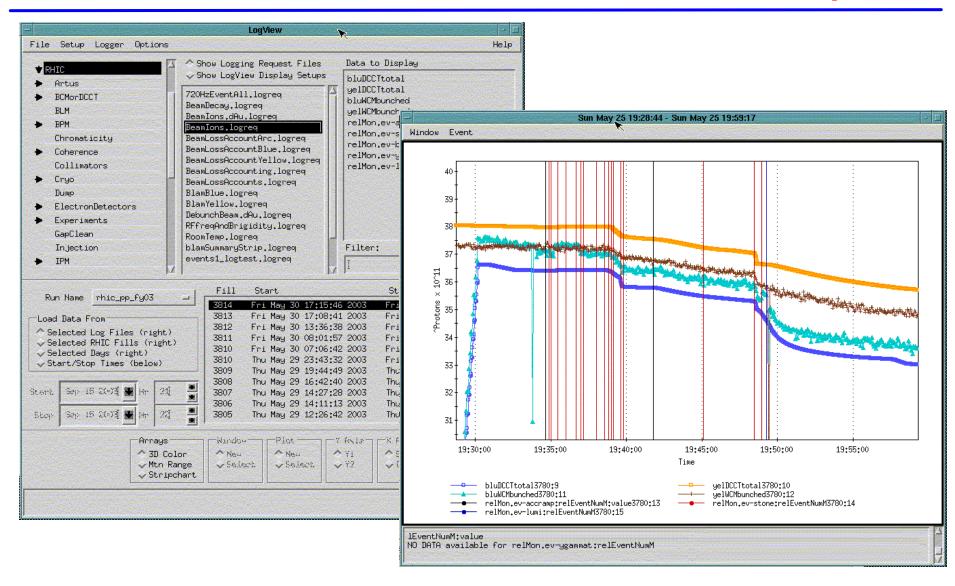NATIONAL LABORATORY

What problems can we work on?

- Data analysis packages for commonly available signals, for example:
  - TBT analysis for global/local properties (may be available from Tevatron or RHIC)
  - Tomographic reconstruction for longitudinal and transverse planes
  - Data mining: find correlations
- Data analysis for specialized systems
  - Can be done with simulated data for preparation
- Need to talk to CERN to find "good" problems
  - What data will be available?

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- For beam and machine data, database needed
  - LEP data base
  - Shot Data Analysis at Tevatron
  - LogView data at RHIC
- Remote access to these data needed
  - Firewalls?
  - Bandwidth?
    (RHIC data from home already considerably slower)

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Tevatron Shot Data Analysis – Intensity-transmission correlation
(P. Lebrun, 2002)

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RHIC LogView data system (R. Lee et al.)

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Need to find role for LARP personnel
in CERN commissioning

- Consider boundary conditions for US based people, and CERN concerns

- Need close cooperation with CERN to find suitable problems

- Define responsibilities for LARP personnel

- Make machine and beam data available at involved US institutes

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